

Physical Science Support Document

Carton Compounds: Background Information

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Targeted *Standard Course of Study* Goals and Objectives

GOAL 1: The learner will develop abilities necessary to do and understand scientific inquiry.

1.03 Formulate and revise scientific explanations and models using logic and evidence to:

- Explain observations.
- Make inferences and predictions.
- Explain the relationship between evidence and explanation.

GOAL 6: The learner will build an understanding of regularities in chemistry.

6.01 Analyze the periodic trends in the physical and chemical properties of elements.

- Groups (families).
- Periods.

6.02 Investigate and analyze the formation and nomenclature of simple inorganic compounds.

- Ionic bonds (including oxidation numbers).
- Covalent bonds.
- Metallic bonds.

Materials (per group of 2 students)

- 1 egg carton
- 10 marbles
- One small piece of construction paper
- Scissors

Introduction to the Teacher

Elements need to be happy. In order for them to be happy, they have to have 2 electrons in the first energy level. If they are in the second energy level they have to have 8 electrons to be happy. If they are not happy, they find a way to get happy. They get happy by combining with another element. When they combine, they combine in two ways:

- 1) Ionic bonding-when one metal transfers valence electrons to a nonmetal so each element achieves an octet.
- 2) Covalent bonding-when two nonmetals share valence electrons.

When two elements combine and have full energy levels, then they are happy. If the element is happy then the chemist calls it a stable compound. We will make some of these stable compounds.